

# Recombinant Viral Vectors as Suitable Surrogates for Pilot Antiviral Screening Studies of Medicinal Plants

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# Scientific Rationale & Objectives

High throughput antiviral screening studies of the vast number of potential antiviral medicinal plants requires methods that are:

- Safe
- Rapid,
- Reproducible
- Cheap



Reporter-gene based assays using recombinant or wild-type viruses

## The Need for Novel Antiviral Medicinal Plants:

- Williams J.E. (Alt.Med. Rev.2001;6:567-579). „Relatively few Antiviral drugs are available and those approved for use often have **high side-effect** profiles and exhibit the potential to cause **rapid resistance** among the targeted viral strains“
- Cowan, M.M. (Clin. Microb. Rev.1999;12:564-582).“Mainstream medicine is increasingly receptive to the use of antimicrobials and other drugs **derived from plants** (because) **traditional antibiotics are becoming ineffective** and because new, particularly, **viral diseases remain intractable to these type of drugs**“ ...“The ascendancy of HIV has spurred intensive investigation into plant derivatives which may be effective especially for use in developing nations with **little access to expensive western medicines**“



# Key Findings & Achievements

- The results obtained are as follows:
  - 1. Compounds from *Aglaia* species, *Ramalina farinacea*, *Jatropha tanjorensis* and *Nymphae lotus* displayed potent anti-HIV activity, with  $IC_{50}$  ranging between 2.7 and 18.2  $\mu\text{g/ml}$ , with a generalized comparative 10 times higher potency against the wild-type HIV-1. The anti-HIV effect and antiretroviral spectrum of activity of nevirapine was authenticated using both wild-type and HIV-1 vector.
  - 2. Only selected compounds from *Aglaia* and *R. farinacea* did show potent anti-Ad5 activity.
- The conclusions drawn:
  - 1. The recombinant viral vectors are safe and reproducibly mimic the wild-type viruses.
  - 2. Several plant-based and two standard synthetic compounds were appropriately screened using the vector-based technique, and this technique could be used to rapidly authenticate the antiviral potentials of several indigenous medicinal plants.



# Challenges & How Resolved

- Adapting this vector-based system for the screening of the wide array of medicinal plants in Nigeria with limited infrastructural and technical facilities.
- Resolved by collaborating with institutions abroad where doctoral and postdoctoral students can develop capacity in this area of research



## Future Directions & How ANDI Can Contribute

- There is need to embark on necessary clinical studies for the future clinical use of the successful plant extracts.
- ANDI should provide logistic, technical and financial support for the clinical development of these agents.
- ANDI can also support in establishing a lab in our institution for this kind of screening



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